

**ABSTRACT OF THE DISCLOSURE**

In a cam torque actuated (CTA) system that has a crank shaft coupled to at least one cam shaft. The system has at least one timing gear associated with the crank shaft or a cam shaft. The timing gear includes at least two groups of toothlike projections including 5 a first group having a first distance to the center of the wheel, and a second group having a second distance to the center of the wheel. The first distance is different from the second distance. Whereby torsional energy for torque actuated purposes is increased for the CTA system. The system may further include a resonator which is positioned upon the at least one cam shaft, the resonator including at least one mass and at least one elastic element. 10 Whereby torsional oscillation of the at least one cam shaft at a predetermined engine speed range is increased.